

and other facts point to a recent origin of the pine forests under consideration, which might not have been in existence at the time of the landing of Columbus. This fact is more apparent when it is stated in this connection that the average age of the pine is less than three hundred years in this country; and the other fact is reiterated that it does not reproduce on the same soil. The present pine forests, then, doubtless took the place of some other species, which had exhausted the soil necessary to their existence, a phenomenon well known to naturalists. It matters not whether the seeds were blown there by the winds, or lay dormant in the soil until their turn, or, indeed, what the speculation concerning them is, so long as the facts are inaccessible; certain it is the origin of the pine forests in Michigan is a matter of several centuries ago.

Ueber die weiblichen Bluethen der Coniferen, von A. W. Eichler, Berlin, 1881 (a pamphlet of 32 octavo pages, and a double plate).—In this interesting paper Professor Eichler frankly avows that his views respecting the female flowers of Coniferæ have undergone some important changes since the publication of his Bluethendiagramme. The views now held are, as he states, essentially those found in Sachs' Lehrbuch, but he adduces copious illustrations in support of them, and adds a succinct history of the controversy regarding gymnospermy. Since the time of Robert Brown most botanists have held that the ovules of Coniferæ are naked, while a few have considered them as ovaries with single ovules. The main point, however, in the late discussions has been with respect to the nature of the bodies, often scale-like, from which in most cases the ovular structures arise. Notwithstanding their flatness, the scales have been looked upon by some as axial in their character; by others as leaves and hence carpellary. From the short extract which is translated below it will be seen that the author does not regard it as impossible to harmonize the conflicting views, at least in part. "In all Coniferæ, the scales of the so-called female ament represent nothing but simple leaves; the inner scales, where they are met with, being ventral outgrowths therefrom. The ovules take their origin either on the inner surface of these leaves or in their axils (in *Taxus* and *Torreya* only, they appear at the apex of a special bracted axis. In these two genera the ovules are to be regarded as female flowers; in all the other genera the ament represents collectively the individual female flowers, the leaves being open carpels.). At first sight there appear to be important morphological differences which, in a family so conspicuously natural as Coniferæ, we should not expect to find. Thus in one case the ovule seems to be an appendage of the leaf, in another, axillary and therefore seemingly an axillary shoot, and, thirdly, a body at the end of a leafy axis. But these differences are not so great as they appear. The ovule has the character of a macrosporangium, and may perhaps rightly bear this name, as many have proposed. Therefore, what we see realized in a macro-

sporangium (or in a sporangium in general) ought not to surprise us in the case of an ovule. Now it is certain that in *Isoetes*, the sporangia stand on leaves, in *Selaginella* and *Lycopodium* in the axil of the leaf, in *Psilotum* and *Tmesipteris* (as Gobel has lately pointed out) at the apex of a leafy axis. All these genera belong to the same circle of relationship, and also to the very one from which the Coniferæ have descended. The variations therefore serve to strengthen rather than to weaken our position. To be sure, we must give up the notion that the ovule represents either a leaf-segment or a bud, or has been derived from a metamorphosis of one of these two structures; it is the macrosporangium inherited by the phanerogams from the higher cryptogams, but more or less transformed and taking on, like that, a structure *sui generis*. It can be compared to an outgrowth ("emersion"), but it must not be regarded as the exclusive privilege of leaves, or as exclusively axial. The ovule may take its origin like other outgrowths from one organ, or another, or at the limits of the two (that is, in the axil of a leaf). This is plainly so in Coniferæ, as we have seen, and is the case in Angiosperms beyond a doubt." A minor question is incidentally discussed in the paper and again treated of in a subsequent pamphlet by the same author (Ueber Bildungsabweichungen bei Fichtenzapfen, Berlin, 1882). Monstrosities in the scales of fir cones had been adduced by some writers as evidence that the seed-scales are not simple but compound structures. A re-examination of the specimen used in support of this theory, and a study of other new examples have served to convince Professor Eichler that the carpellary "scale is a simple organ, but that by the appearance of a bud on the posterior aspect, it may undergo all kinds of deviations, and even split into two or more often three leaf-like lobes."—G. L. GOODALE.

Githopsis.—Baillon in Bull. Soc. Linn., Paris, no. 38, p. 304, states that besides wild specimens of *G. specularioides*, the herbarium of the Museum at Paris has specimens raised from Texan seeds in the Botanic Garden at Cambridge, which show that the capsule dehisces by triangular "*panneaux*" below the calyx; wherefore the genus subsides into *Specularia*. Now *Githopsis* is unknown in or near Texas, and has never been raised in the Cambridge Garden. *Specularia Lindheimeri* is Texan and has been cultivated here. It appears that Baillon has taken this for *Githopsis*.—A. GRAY.

Notes on *Ambrosia trifida*.—Last year I made quite extensive researches as to the facilities presented by weeds for the dissemination of seeds, hoping thereby to gain a true insight into their nature. The results show that an explanation is not to be sought here, but in their tenacity of life when injured, their power of de-